REMARKS

In the Office Action, claims 1-20 were rejected. Reconsideration and allowance of all pending claims are requested.

Rejections under 35 U.S.C.§102

The Examiner rejected independent claims 1 and 11 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,347,466 (hereinafter "Nichols"). The Examiner cited specific passages from Nichols for rejecting claims 1 and 11. Applicants have carefully reviewed Nichols and respectively submit that claims 1 and 11 are allowable for at least the reasons set forth below.

The Examiner referred to a section at Col. 1, lines 6-43 (reproduced below) of Nichols as anticipating the various operating conditions that are simulated by the system disclosed in Nichols:

> The present invention relates to a method and apparatus for simulating the components and overall system of a steam power plant for the generation of electrical energy, and to the optimization of the operating characteristics of the power plant system. More particularly, it relates to a method for simulating and optimizing a power plant having components made up of steam turbines and gas turbines, together with boilers for powering the steam turbines, and associated apparatus such as economizers, deaerators, preheaters, pressure reducing valves, compressors, pumps, fans, and other auxiliary powerhouse equipment. The optimization of the present invention configures the components of the system for minimum operating cost for any given requirement for output power and output steam flows at various pressures, and a given cost for fuel and additional electric power which may be required to be purchased to satisfy an energy demand not satisfied by the power plant. A complete power plant, including multiple turbines of various types and associated equipment, represents a very complicated system, and the operation of

> various components affect each other, so that a change in
> the operating mode of one component of the system affects
> the operation of other components, with varying results. In
> order to operate at maximum efficiency, each of the
> components must be "tuned" in its operational
> characteristics, so that the system, as a whole, operates with
> maximum cost efficiency in terms of the cost per hour of
> running the power plant at a given demand load, and the
> cost of excess electrical power which must be purchased
> from an outside source in order to make up the required
> total power demand. Thus, complexities have presented
> severe difficulties in the design and the operation of such
> power plants, and also represent complications in
> retrofitting process/powerhouse equipment or extension of
> an existing power plant.

While Nichols discloses running the simulation for optimizing the system, Applicants submit that the system disclosed in Nichols runs the simulation only when demand exceeds the output power. The Examiner's rejection of claim 1 over the referenced section was based on a belief that the simulation performed when the demand exceeds the output power may be equated to a specified period of time. On the contrary, Applicants submit that conditions when demand exceeds the output power are not and cannot be anticipated in advance and that the system disclosed in Nichols merely functions whenever the conditions are met. Even then, the Nichols calculations are made for a particular point in time.

Claim 1 recites, *inter alia* running a simulated power plant operation for a specified period of time, based upon the power plant input configuration and the inputted power plant operational information. The conditions for running the simulation as disclosed in Nichols and as recited in claim 1 are inherently two different and mutually exclusive events. Nichols never runs a simulation *for a specified period*, but merely makes calculations for various operation points. Therefore, it is clear that the referenced section does not support a *prima facie* case of anticipation of claim 1. Subsequently, in

view of at least the reasons set forth above, Applicants submit that claim 1 is allowable over the subject matter disclosed in the referenced section herein above.

The Examiner referred to section in Col. 2, lines 64- Col. 3 line 2 (reproduced below) of Nichols as anticipating the various operating conditions that are simulated by the system disclosed in Nichols:

> It is also possible to study the effects of modification of the system, either by adding components, or by altering existing components. In this way, the power plant can be modified or extended or units can be retrofitted to make use of emerging technology, or simulate and optimize the effects of new powerhouse equipment that does not currently exist in the powerhouse.

While Nichols discloses simulating to determine the effect of removing components for maintenance or replacements, Applicants submit that the system disclosed in Nichols *does not run the simulation for a specified period of time*. Though the reference discloses removing components of the power plant for maintenance and replacements, Nichols fails to teach the running of the simulation for a specified period of time. Again, claim 1 recites, *inter alia*, running a simulated power plant operation for a specified period of time, based upon the power plant input configuration and the inputted power plant operational information. Therefore, it is clear that the referenced section does not support a *prima facie* case of anticipation of claim 1. In view of at least this further reason, Applicants submit that claim 1 is allowable over the subject matter disclosed in the referenced section herein above.

The Examiner also referred to section in Col. 6, lines 1-8 (reproduced below) of Nichols as anticipating the various operating conditions that are simulated by the system disclosed in Nichols:

> The optimization program may be repeated indefinitely,
> with random variations of operating characteristics being
> investigated, until a still lower operating cost is found with
> a different combination of operation parameters. As more
> fully described hereinafter, the range of random variation is
> made smaller, following a period in which a lower
> operating cost solution is not found, to insure that a true
> local minimum is identified.

While Nichols discloses "a period," Applicants respectfully submit that the period referred to in Nichols is actually the time *interval* between two iterative runs of the simulation. In fact, col. 6, lines 1-8 clearly define the period as a time when no lower operating cost solution is found. The purpose of the period is to permit the identification of a true local minimum. Therefore, it is clear that the referenced section does not support a *prima facie* case of anticipation of claim 1. In view of at least this additional reason, Applicants submit that claim 1 is allowable over the subject matter disclosed in the referenced section herein above.

The Examiner still further referred to section in Col. 10, lines 63-65 of Nichols as anticipating the various operating conditions that are simulated by the system disclosed in Nichols. While the cited section in Nichols discloses an iterative simulation of waste heat boilers and gas flow economizers until water temperatures converge, the referenced section does not disclose a simulation for a specific period of time. Therefore, it is clear that, here again, the referenced section does not support a *prima facie* case of anticipation of claim 1.

The Examiner also referred to sections in Col. 16, line 66 – Col. 7, line 4 (reproduced below) and Col. 19, lines 27-30 (reproduced below) of Nichols as anticipating the various operating conditions that are simulated by the system disclosed in Nichols.

In addition to specifying the various groups to be optimized, the operator may specify the number of iterations to be performed, before interruption to permit user intervention, if desired. In this event, unit 408 does not prompt for variables, but instead passes control directly to unit 410, for the number of specified iterations. Col. 16, line 66 through Col. 7, line 4.

The operator may select the number of restarts to be performed in sequence, so that restarts are initiated automatically after each convergence on a local optimum. Col. 19, lines 27-30

While the cited sections of Nichols disclose that an operator specifies the number of iterations and/or the number of restarts to be performed in sequence, the Applicants submit that in the present application, the simulation is not constrained by such operator input or simple iterations. Instead, in the present application, the simulation computes and determines the period of time and executes the simulation for a desired period. Therefore, it is clear that, here again, the referenced section does not support a *prima facie* case of anticipation of claim 1. In view of at least the reasons set forth above, Applicants submit that claim 1 is allowable over the subject matter disclosed in the referenced section herein above.

Subsequently, in view of the reasons set forth herein above, Applicants submit that independent claims 1 and 11 are clearly not anticipated by Nichols to support a *prima facie* case of anticipation under 35 U.S.C. §102(b). Therefore, Applicants respectfully request the Examiner to reconsider rejection of the independent claims 1 and 11 and all claims depending therefrom.

Rejections under 35 U.S.C. §103

In the Office Action, claims 2-6, 8-10, 12-16, and 18-20 were rejected under 35 U.S.C. §103(a) as being unpatentable over Nichols in view of U.S. Patent Publication No. 2002/0120412 (hereinafter "Hayashi"). Also, claims 7 and 17 were rejected under 35

U.S.C. §103(a) as being unpatentable over Nichols, in view of Hayashi, as applied to claims 2 and 12, and further in view of U.S. Patent No. 6,226,597 (hereinafter "Eastman").
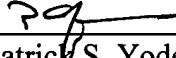
Claims 2-6, 8-10, 12-16, and 18-20 depend directly or indirectly from an allowable base claim. Therefore, in view of such dependency as well as for the subject matter the claims separately recite, Applicants request allowance of claims 2-6, 8-10, 12-16, and 18-20.

Conclusion

In view of the remarks and amendments set forth above, Applicants respectfully requests allowance of the pending claims. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

Date: ___3/18/2005___

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